



Tron VHF

your safety – our concern

OPERATORS MANUAL

GB



EC Declaration of Conformity, available at www.jotron.com

The equipment complies with the following Directives:
MED 96/98/EC
EMC 89/336/EEC

Harmonized Standards applied in order to verify compliance with the Directive(s):
ETS 300 225:1998
EN 300 828:1998
EN 60945
EN 50022 class B

The information in this book has been carefully checked and is believed to be accurate. However, no responsibility is assumed for inaccuracies.



CAUTION!

This equipment contains CMOS integrated circuits. Observe handling precautions to avoid static discharges which may damage these devices.

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WARNING / IMPORTANT

Jotron Electronics a.s. is a prime manufacturer of safety equipment designed for rescue of human lives and their property. For safety equipment to be effective in line with the design parameters it is important that they are handled, stowed and maintained in compliance with the manufacturers instructions. Jotron Electronics a.s. can not be held responsible for any damage caused due to incorrect use of the equipment or breach of laid down procedures or for failure of any specific component or other parts of the equipment.

The chapter covering battery replacement (5.1) is added for information only. Jotron Electronics a.s. does not take any responsibility for improper disassembling/assembly of the beacon. We strongly recommend all service to be done by authorized Jotron agents. In addition to normal service, Jotron agents have the necessary equipment and education to test the operational functions of the beacon. Non-original maintenance and/or service parts may destroy the equipment function and performance.



REVISION HISTORY

CHANGES	RECORD NO.	CHAPTER	VERSION
NEW MANUAL	EM3903	CAP. 5	B



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GLOSSARY

C O S P A S

Cosmicheskaya Sistyema Poiska Avariynich Sudov
(Space System for the Search of Vessels in Distress)

S A R S A T

Search and Rescue Satellite-Aided Tracking System

EPIRB	Emergency Position Indicating Radio Beacon
LUT	Local User Terminal (Ground Station)
MCC	Mission Control Center
RCC	Rescue Coordination Center
km	kilometer
MHz	Mega-Hertz (10^6 Hertz)
GPS	Global Position System



BATTERY SAFETY DATA SHEET

(Form: EEC directive 91/155)

(2) SAFETY ADVICE

- S2 Keep out of reach from children.
- S8 Keep container dry.
- S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- S43 In case of fire, use D type extinguishers. Never use water.
- S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

(3) FIRST AID MEASURES

In case of contact of cell contents with eyes, flush immediately with water for 15 min. With skin, wash with plenty of water and take off contaminated clothes. If inhalation, remove from exposure, give oxygen, seek medical advice.

(4) FIRE-FIGHTING MEASURES

Extinguishing media

Suitable: Type D fire extinguishers

Not to be used: Water - CO² - Halon, dry chemical or foam extinguishers

Special exposure hazards

Generation of chlorine, sulfur dioxide, disulfur dichloride during thermal decomposition.

Special protective equipment

Use protective working boots, rubber apron and safety glasses with side shields.



INSTRUCTIONS FOR KEEPING THE RADIO LOG AND THE RADIO OPERATORS OBLIGATION ACCORDING TO NATIONAL AND INTERNATIONAL REGULATION.

1. The radio log shall be kept in accordance with requirements in the Radio Regulations, SOLAS Convention, national regulations regarding radio installations and the STCW Convention (STCW 95 including the STCW Code) including relevant regulation regarding watchkeeping on board passenger- and cargo ships.
2. Unauthorized transmissions and incidents of harmful interference should, if possible, be identified, recorded in the radio log and brought to the attention of the Administration in compliance with the Radio Regulations, together with an appropriate extract from the radio log. (STCW Code B-VIII/2 No.32)

TEST OF RADIO EQUIPMENT AND RESERVE SOURCE OF ENERGY

Weekly:

GMDSS handheld VHF transceivers to be tested without using the mandatory required emergency batteries.

Monthly:

Float-free and manual EPIRBs to be checked using the means provided for testing on the equipment. Check data for periodical maintenance requirement for float-free EPIRB.

Float-free EPIRBs are required to go through a periodical maintenance every 24 months. (Only for NOR/NIS flag vessels).

False alerts transmitted by EPIRB

False alerts are a serious problem for the rescue service. Nearly 90% of EPIRB initiated distress alerts turn out to be false alarms.

If for any reason, your EPIRB should cause a false alarm, it is most important that you contact the nearest search and rescue authority and tell them it was a false alarm. They can then stand down any rescue service (coast radio station or appropriate CES or RCC). Use any means at your disposal to make contact. Switch off the distress alarm by de-activating your EPIRB, as soon as possible.





TEST AND MAINTENANCE RECORD

DATE	N/T/B	SIGN	INSP

N=NEW EPIRB INSTALLED, T=TEST, B=NEW BATTERY



1 INTRODUCTION

1.1 GENERAL

TronVHF is specially designed and manufactured to comply with the GMDSS Survival craft two-way VHF radiotelephone apparatus. The radio is covering the specifications from the International Maritime Organization (IMO) Resolutions A.569(14), A.605(15) and A.694(17), A.809(19) ITU Radio-regulations 18 and 19, SOLAS 1974, as amended in 1988, and ETS 300 225.

TronVHF is a 156 MHz 1W radiotelephone with a housing made of rough glassfilled polycarbonate in a highly visible orange colour, and is a result of a comprehensive development to meet the requirements encountered under severe maritime conditions. It is possible to install up to 11 operating channels for international maritime mobile service and is well fitted for on-board communication.

1.2 FEATURES

– Watertight

TronVHF is watertight to a depth of 1 metre for 5 minutes. With the batteries 93002 and 93030, it is also floats in case of accidental drop in to the water.

– Rugged design

TronVHF is made to resist a drop from 1 metre onto a hard surface. It is also resistant to seawater, oil and sunlight, and is not unduly affected by this.

– Handling

TronVHF is made for easy operation, with a brief operating instruction printed on the front. It is possible to fully operate TronVHF with only one hand and operation when wearing thick gloves or survival suit gloves is no problem.

– Housing

TronVHF is of small size (70 x 195 x 50mm), and has no sharp edges to damage raft or clothing. It also comes with a belt clip and a short wrist strap for easy carrying.



– Low power consumption

TronVHF has a low power consumption and will operate for a long time. With a transmit, receive and standby ratio of 1 : 1 : 8 the battery lifetime is more than 8 hours.

– LED indicators

TronVHF is equipped with LED's to indicate its status. There are two LED's to tell which channel is active and one to indicate power output during transmission. The colour of the LED's are red, to prevent the night sight from being impaired. The Tx LED flashes when battery voltage is low.

– Frequency synthesizer

TronVHF is built with a frequency synthesizer to assure an easy channel selection, with high frequency stability.

– Electronic construction

TronVHF is built with surface mount techniques on one multilayer circuit board, to assure homogeneous quality and high reliability.

– Battery pack

The Battery pack is easily replaced without any tools. When mounted inside the radio it is protected from rough handling.

– Service

JOTRON's net of trained agents worldwide give the best service and support.

1.3 WHAT COMES WITH TRONVHF

X-93000 TronVHF GMDSS Complete packed

Consisting of:

X-93001 TronVHF without antenna and battery.

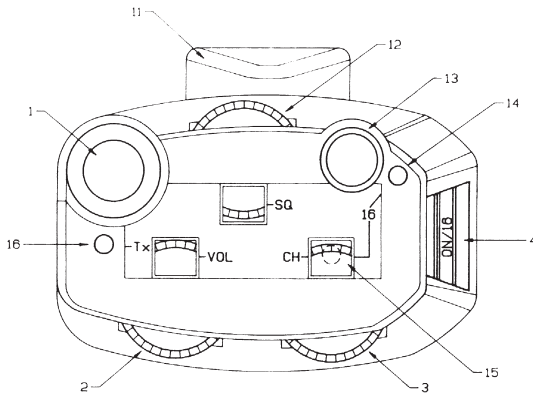
X-93025 Helical Antenna.

X-93002 Lithium Battery for GMDSS use.

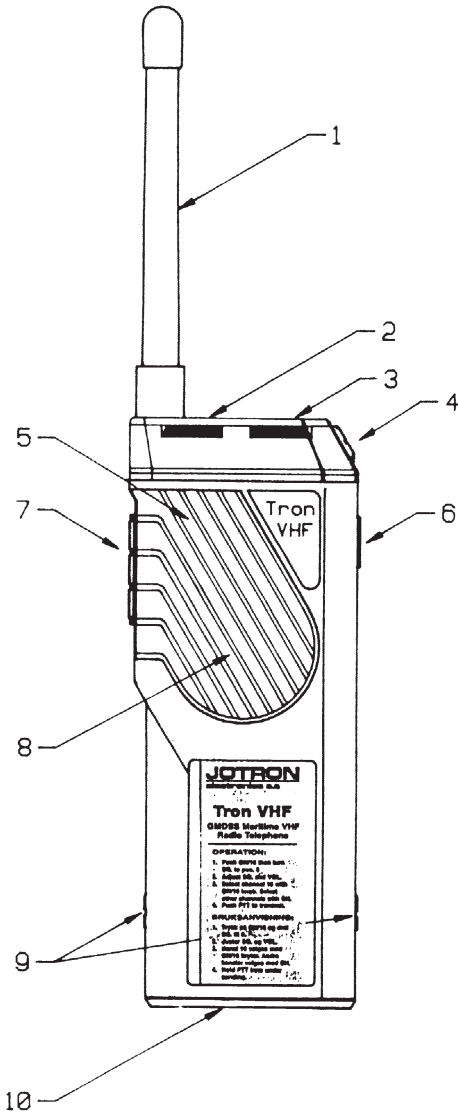
X-93035 Operators Manual.

2 OPERATION

2.1 OUTLINE DESCRIPTION



- 1) *Helical antenna*
The helical antenna is fastened with a M4 heavy duty thread.
- 2) *Volume control*
Sound volume is increased with increasing number in indication window.
- 3) *Rotary channel selector*
To select channel's, other than channel 16, turn rotary switch. The selected channel will be displayed in the window (15). The selected channel is only active when there is light under the channel number. If channel 16 is active, turning the rotary switch will activate rotary channel selector and turn of channel 16.
- 4) *ON / Channel 16 selector*
Pushing ON/16 turns on the power and puts the radiotelephone to channel 16. Whenever wanting channel 16 after having used another channel, push this button again.
- 5) *Microphone*
Talk into the microphone during transmitting.
- 6) *OFF switch*
Push OFF to switch off the power.
- 7) *PTT (Push To Talk)*
Push PTT for transmitting, release for receiving.
- 8) *Loudspeaker*
Sound is produced from the loudspeaker during receiving.



- 9) *Battery release buttons*
When changing battery, push these buttons and pull out the battery pack.
- 10) *Battery pack*
Supplies power to the radiotelephone. See section 3.1 for changing battery.
- 11) *Belt clip*
For attaching to a belt.
- 12) *Squelch control*
Squelch level is increased with increasing number in indication window.
- 13) *Remote connector*
Connector for remote equipment. See section A.2.3 for pin description.
- 14) *Channel 16 indication*
Light is indicating that channel 16 is selected.
- 15) *Selected channel indication*
Light is illuminating the selected channel number.
- 16) *Transmit indication*
The light is on during transmitting. This light is monitoring transmit output. If no output when PTT is pressed, this may indicate a fault.



2.2 HOW TO OPERATE TRONVHF

2.2.1 Switching ON and selecting channels

- 1) Turn VOL and SQ to position 0.
- 2) Turn TronVHF on by pushing the ON/16 button for 3 seconds. TronVHF is now working on channel 16.
- 3) Adjust the sound volume by turning VOL. Use noise from the loudspeaker to find a proper level.
- 4) Adjust the squelch level by turning SQ. Turn SQ carefully until noise from the loudspeaker is suppressed. Be careful not to turn the squelch level to high. This may lead to no squelch opening when weak signals are received. The TronVHF is now ready for reception.
- 5) Selecting another channel is done with the CH wheel. 16 light will switch off and CH light will switch on.
Re-selecting the channel 16 is done by pressing ON/16.

2.2.2 Emergency call sequence

- 1) Start the emergency call sequence by selecting channel 16.
- 2) Emergency calling:
 - Push PTT and send the emergency signal MAYDAY, repeated three times,
 - the words; THIS IS,
 - call sign or other identification on the mobile station being at distress, repeated three times.
 - Release PTT.



Emergency call answer:

- The word; MAYDAY
- the call sign or other identification, repeated three times.
- the words; THIS IS,
- call sign or other identification on the mobile station answering the emergency call, repeated three times,
- the words; RECEIVED MAYDAY.

When no answer:

- Repeat point 2).
- If there is no answer on channel 16, try any channel and repeat point 2).

3) Emergency message:

- Push PTT and send the emergency signal MAYDAY,
- call sign or other identification on the mobile station being at distress,
- information on position,
- what kind of emergency it is,
- what kind of help is needed,
- other information that can be of any help to the rescue operation,

4) Emergency traffic:

- During emergency traffic, always use the emergency signal; MAYDAY, in front of any radio-message.

5) Asking for silence on the air:

- In cases where the emergency station wants to order silence, use the words; SEELONCE MAYDAY.

2.2.3 Switching OFF

Switching off the TronVHF is done by pressing OFF button until all lights are off. This is indicating that power is off. If you are leaving the power on, the total operating time will be much shorter.



3 PRIMARY BATTERY

3.1 HOW TO CHANGE THE BATTERY

The primary battery unit is a 7.2V / 5000mAh lithium cell. This unit is specially designed for GMDSS emergency use to preserve a long shelf- and operating-life.

Type no. of battery: X-93002

Battery change procedure:

- 1) Hold down the two push-buttons on each side, and pull the battery pack out of the housing.
- 2) Check the gasket inside the housing for no damage.
If it is broken, replace it with a new (stock no. X-93024). Remove dirt when replacing the gasket.
- 3) Replace the expired battery. The label on the battery is marked with date of replacement.
The primary battery is equipped with a seal to prevent inadvertent use. Break this seal before use. Breaking this seal indicates that the shelf life has expired.
- 4) Push the new battery unit into the housing until you hear the two push-buttons are clicking into right position. Tron VHF will not be waterproof unless the pushbuttons are in correct position.

3.2 WHEN TO CHANGE THE BATTERY

Replace the battery before expiry date. The battery pack, 93002, has a shelf life of 4 years.

If TronVHF is indicating low voltage during a regular test procedure, also change the battery. The Tx LED also flashes when battery voltage is low.

To prevent the possibility of being in an emergency situation with a TronVHF equipped with a used battery, we strongly recommend storing an extra battery-set, 93002, in lifeboats and rafts. Store this battery without breaking the plastic bag sealing.



3.3 SPECIAL CARE

The battery pack, 93002, is of high energy lithium type, and some precautions must be taken.

Do not heat above 100°C, recharge, crush, disassemble or incinerate. This may result in fire, explosion and severe burn hazard.

Do not throw used batteries overboard, but return them to your local dealer.

4 SECONDARY BATTERY AND CHARGER

4.1 USING THE NICKEL-CADMIUM BATTERY

Tron VHF can be delivered with a rechargeable NiCad battery, type 93003/93030 (850mAh/400mAh) which is equipped with two connectors for charging with Tron CHARGE.

These battery are specially designed for On-Board communication.

After recharging the battery, it can be used in the same way as the primary battery unit. However, the voltage of Nickel-Cadmium batteries drops rapidly just before they are exhausted, so when the transmit indicator LED (Tx) goes out, be sure to immediately stop using it, and recharge the batteries again.

When changing the batteries, see chapter 3.1 How to change the battery.

4.2 HOW TO CHARGE THE NICKEL-CADMIUM BATTERY

1. Use the Tron CHARGE NiCad charger and power it up.
2. The power of Tron VHF must be switch OFF, or remove the battery unit from the transceiver.
3. Insert the Tron VHF / battery unit into the charging slot.
4. The Charge LED will indicate that the charge cycle is beginning. It is now operating in fast charge mode which will fully charge the battery within 4 hours.
5. When Charge LED goes out, the battery is recharged. The charger has now switched to trickle charge mode.



6. Charge temperature must be between 0°C and 40°C.
7. After charging, remove the unit from the charger. The Tron VHF and battery is now ready for operation.

4.3 SPECIAL CARE

The battery pack, 93003 and 93030, is of Nickel-Cadmium type, and some precautions must be taken.

Do not shortcircuit, solder, reverse charge, crush, disassemble or incinerate. This may result in fire, explosion and severe burn hazard.

Also avoid charging under 0°C or over 40°C.

4.4 THE TRON CHARGE NICAD CHARGER

The Tron CHARGE NiCad charger is specially made for charging your secondary battery, type 93003 or 93030. On the left side there is space for storing the primary emergency battery, type 93002.

The charger has a fast charge facility which fully charges the 93003 battery within 4 hours. When the battery is fully charged, this is detected, and Tron CHARGE switches to trickle charge mode. This is indicated with the Charge LED switching off.

There are also built in temperature sensors detecting charge temperature limits and sudden rises in battery temperature. If the charger is detecting out of limit temperatures, this causes the unit to switch to trickle charge mode. It is important to note that the absolute battery temperature is not detected by the charger, and must be within 0°C to 40°C when starting the charge cycle. The charger supply can be 230V AC, 115V AC, 12 to 16V DC or 24 to 28V DC. For changing the AC source, modifications must be done on the Printed Circuit Board. If a DC source is required, the power cable must be connected to the +12VDC socket within the unit. For 24 to 28V DC an extra resistor of 33ohm/20W must be connected in serial with the power supply. This resistor is available from JOTRON at stock number X-93750.

NOTE!

If Tron CHARGE is connected to a DC source with higher voltage than 16V DC, an extra resistor of 33ohm/20W must be connected in serial with the power supply. This resistor is available from JOTRON at stock number X-93750.



5 MAINTENANCE AND SERVICE:

5.1 HOW TO TAKE CARE OF YOUR TronVHF

TronVHF is constructed to endure the rough maritime environment. Still the life is dependent on taking care of the equipment. It is a good practice to regularly inspect and test the equipment to trace error symptoms and prevent more serious problems.

To keep in mind during inspection:

- If TronVHF has been immersed into sea water, it is a good practice to clean it in fresh water.
- Inspect battery sealing and battery gasket.
- Inspect the housing for defects which can affect the water sealing.

5.2 SERVICE

Warranty Service.

The warranty of the equipment is not valid if the customer has tried to repair, modify or rebuild the unit, deliberate or accidental damage, failure to follow JOTRON's instructions with respect to approved service agents or if the unit has been exposed to environmental conditions outside the specifications for the unit. As a standard Jotron Electronics AS warrants that this product will be free from defects in materials and workmanship for a period of 12 months from the date received by end user, limited to 18 months from purchase from Jotron.

If necessary to have the unit repaired, please return it carriage pre-paid to the agent where you did your purchase. Provided that the unit(s) returned for repair is found to be under warranty, man-hour cost and material cost will be covered by Jotron. Additional costs not related to repair/replacement of the unit will not be covered.

Out of Warranty Service.

For defects arising from normal wear and tear after 12 months of operation, limited to 18 months from purchase from Jotron, normal service conditions will apply.

For details see: <http://www.jotron.com>.



5.3 REGULAR TEST PROCEDURE

It is important to perform regularly testing to ensure proper operation in case of a distress situation. If TronVHF is used regularly, perform test every month. When TronVHF is stored in a lifeboat or raft, perform test at least once a year.

Step	Unit	Description
1	Battery	If Tx light is flashing, change the battery. Also check if Tx light is flashing during transmitting.
2	Volume control	Check if VOL control is smooth operating, and check if sound is increasing gradually.
3	Squelch control	Check if SQ control is smooth operating, and check that noise is muted with increasing squelch level.
4	Transmit	Check that Tx is lighting when transmitting. Tx light indicates that carrier is produced at the antenna output.
5	Talk test	Communicate with another radiotelephone to test receive and transmit functions.

5.4 CLEANING OF DIRT AND OIL

To clean away oil and dirt from the radio, use ordinary dish-soap and water. Immerse the radio into the solution for apx. 5 min. and wash it clean.
The water temperature can be up to 45°C warm. Finish of by rinsing with fresh water.

6 TROUBLESHOOTING

6.1 PRECAUTIONS

- Before shipping TronVHF for repair, please check fundamental procedures on operation and battery condition.
- On repair please contact your nearest JOTRON agent.
- Do not disassemble TronVHF unless you have JOTRON service authorization.
- See the next chapter for failure diagnosis. This may be of help when discussing problems with an JOTRON agent.



6.2 GUIDE TO TROUBLESHOOTING

Problem	Possible causes	Possible solutions
1 No lights are turning on at switch on, or Tx is flashing.	a) Battery is discharged. b) Failure in power supply.	a) Change to a fully charged battery. b) Voltages on circuit board must be checked.
2 All three light's are turned on.	TronVHF is in programming mode.	Reset by switching power OFF.
3 Channel light is flashing.	a, b) Frequency synthesizer is out of lock. c) Failure in frequency synthesizer.	a) An unprogrammed channel is selected; try another channel. b) Try a reset by switching power OFF. c) Test EEPROM for channel data. An JOTRON agent can do this. If this doesn't help, check synthesizer.
4 Tx light is not responding during transmitting.	Failure in transmitter.	Transmitter must be checked.
5 Tx light is on during transmitting but communication is impossible.	Use of wrong channel number.	Use same channel number as partner station.
6 You know there is a signal coming, but TronVHF is not responding.	a) Squelch is muting. b) Failure in receiver.	a) Adjust squelch to 0. b) Receiver must be checked.

7 OPTIONS

TronVHF can be supplied with the following equipment as options or spare parts. In order to protect the radio from mechanical wear and tear, we recommend using the leather carrier case with shoulder strap. If TronVHF is used for on-board communication, a battery charger and re-chargeable batteries are available specifically for this application. Other types of accessories are also available from JOTRON's agents.



Part no.	Description
31030	Headset type Peltor MT7H7A Noise reducing communication headset with two loudspeakers and boom-microphone.
31042	Adaptor cable, Peltor FL-9 type with PTT. Connecting Peltor headset to Tron VHF.
97623	Fist Microphone VM 2622
97624	Fist Microphone VM 2621, splash proof
93030	Rechargeable NiCad battery 400 mAh Black colour with orange top, (Makes the unit floating)
93003	Rechargeable NiCad battery 850 mAh Black colour, (Makes the unit non floating)
93080	Tron Charge battery charger, 220V AC as standard
93031	Leather carrier case
93750	Resistor set for Tron Charge, if powered by DC voltage higher than 16V
93475	Bulkhead bracket
97638	GMDSS Installation cabinet for 3 VHF

SPAREPARTS

Part no.	Description
93002	Emergency lithium battery Orange colour (Makes the unit floating)
93025	Antenna
93024	Battery gasket
93035	Operator's manual for Tron VHF
98761	Spacer for Tron Charge



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